~~57. (New Claim) The mobile telephone of claim 55 that communicate signal bursts~~ between mobile telephones and a satellite relay station over uplink and downlink radio frequency (RF) channels, a mobile telephone comprising:

a transmitter for transmitting a constant envelop modulated signal to the satellite relay station over an uplink RF channel; and

a receiver for receiving a linearly modulated signal from the satellite relay station over a downlink RF channel, wherein

said linearly modulated signal is a OQPSK signal.

58. (New Claim) The mobile telephone of claim 55 that communicate signal bursts between mobile telephones and a satellite relay station over uplink and downlink radio frequency (RF) channels, a mobile telephone comprising:

a transmitter for transmitting a constant envelop modulated signal to the satellite relay station over an uplink RF channel; and

a receiver for receiving a linearly modulated signal from the satellite relay station over a downlink RF channel, wherein

~~the signal bursts are TDMA signal bursts.~~

Remarks

This amendment is being submitted under 37 C.F.R. 1.111, canceling claims 1-46 of the parent application and introducing new claims 47-58. As further discussed below, the newly submitted claims cover a disclosed feature related to transmitting constant envelope modulated signal bursts from the mobile telephones to a satellite station and receiving linearly modulated signals bursts of the mobile telephone from the satellite.

As disclosed in pages 5-10 of the specification, the communication system of the present invention uses a wide-band TDMA frame format having many slots (e.g. 32) on the uplink or forward link (i.e., the communication channel for transmitting information from a mobile telephone to an orbiting satellite), while using a narrower-band TDMA frame with fewer slots (e.g. 8) for downlink or the return link (i.e., the communication channel for

transmitting information from the orbiting satellite to the mobile telephone). In this way, the wide-band TDMA forward link frame affords receiver simplicity for the mobile telephone, while the narrow-band TDMA frame on the return link reduces the burst power level that the mobile telephone must transmit to achieve a specified return-link level of performance.

Furthermore, in pages 10-12, the specification discloses that a lower-rate return-link vocoder, compared with that of the forward link, increases the possibility of improving the return link margin. By using a lower rate vocoder on the return link (i.e., lower than the vocoder rate used on the forward link) the return link margin is improved in two ways. First, the channel information rate is reduced resulting in increased bit energy for a fixed transmitter power level. Second, the resulting lower information rate allows more channel coding for a given channel bit rate. As a result, an effective return-link margin improvement is attainable by dropping the vocoder rate.

In pages 13-15, the specification discloses further improving link performance by using a constant envelope modulation (such as GMSK) even though the forward link may be using some other modulation format (such as linear modulation OQPSK). More specifically, in page 14, lines 4-6, the specification states that constant amplitude modulation is preferred for transmission from mobile phones as constant-envelope transmitters are simpler and more efficient than non-constant envelope or linear transmitters. This is because a constant envelope modulation on the return link yields maximum radiated power level at the mobile telephone antenna output, since for a fixed current drain of the mobile telephone battery, the typically higher efficiency amplifier used by the mobile telephone to amplify a constant envelope waveform will produce more output signal power.

In page 14, lines 15-16, the specification states that the use of linear modulation for the satellite downlink, for which GSM mobile phone receivers are perfectly adapted, will thus improve the receiver performance compared to transmitting GMSK, as well as reducing the adjacent channel energy." As disclosed in the specification (page 14, lines 16-

17), a linear modulation that is compatible with GSM receivers is a form of Offset Quadrature Phase Shift Keying (OQPSK).

Hence, the newly submitted claims cover the concept of using a non-symmetrical communications system in which the downlink or forward link RF channels employs linear modulation (such as OQPSK) which is most beneficial to the forward link in terms of, for example, minimizing adjacent channel interference, while the return link employs a constant envelope nonlinear modulation format (such as GMSK) which is most beneficial for the return link in terms of, for example, maximizing power amplifier efficiency of the hand-held radiotelephone unit.

Respectfully submitted,

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